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26.0 FITTINGS

26.1 INTRODUCTION

This section contains design criteria applicable to the welding fittings used in the high pressure gas pipeline. Criteria are presented for the material requirements and the design service conditions.

The design procedures include specific requirements that will be incorporated into the final purchase specification.

26.2 CODES AND CRITERIA

26.2.1 Codes

- Code of Federal Regulations, Title 18 – Conservation of Power and Water Resources
- Code of Federal Regulations, Title 49 – Transportation, Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.
- Manufacturers Standardization Society, Standard Practice, "Specification for High Test Wrought Butt Welding Fittings," MSS SP-75-1998.
- Manufacturers Standardization Society, Standard Practice, "Standard Marking System for Valves, Fittings, Flanges, and Unions," MSS SP-25-1998.
- American National Standards Institute, "Factory-Made Wrought Steel Buttwelding Fittings," ANSI B16.9.
- Federal Right-of-Way Grant for the Alaska Natural Gas Transportation System Alaska Segment, Serial No. F-24538 (December 1, 1980), as such may be updated and/or amended from time to time.
- Federal Energy Regulatory Commission conditional certificate of public convenience and necessity, issued on December 16, 1977, as such is finalized

26.2.2 Criteria

- Maximum design operating gas pressure and minimum design operating gas temperature in accordance with the project design basis.
- Minimum design temperature for above grade piping of -50°F normally and lower temperatures for the blowdown components of the mainline valve assembles.
- An adequate level of fracture toughness will be specified to provide fracture initiation resistance of .the base material and welds at the design temperature. The material finally selected will provide adequate ductility at the design conditions to withstand fracture initiation based on accepted fracture mechanics analysis.

- Maximum field hydrostatic pressure to correspond to the pressure that produces a hoop stress of 110% of the Specified Minimum Yield Stress (SMYS) of the mainline pipe.

26.3 DESIGN PROCEDURES

The pressure rating of fittings will equal or exceed that of the matching pipe. All materials used in the fabrication of fittings will be, in their final heat-treated condition, suitable for field welding to other fittings, valve materials, and pipe that will be used.

Scraper bars will be installed in all the tees used in the mainline.

Fittings manufactured and tested in accordance with the final purchase specification will meet or exceed the requirements of MSS SP-75-1998. Fittings smaller than 16 inches will conform to the design and dimensional requirements of ANSI B16.9.